

## **REMARKS**

Continued Examination of this Application is respectfully requested pursuant to 37 CFR §1.114. Reconsideration of this application as amended and in view of the following remarks is also respectfully requested.

Claims 1 - 66 were originally in this application. Claims 1- 66 have all been amended in response to this Final Office Action in this prosecution. The new independent Claims 67-69 have been added in further response to the Final Office Action.

Claims 1 - 3, 13, 15, 17 - 66 were previously amended by deleting the term “comprising” and replacing it with the limiting term “consisting essentially of” to further clarify the novelty of this invention and meet the objections of the Examiner and as discussed below demonstrate that this invention is neither anticipated or rendered obvious by any of the references cited in the first office action. Examiner Chorbaji indicated that the use of the word “comprising” in the claims did not sufficiently limit the claims to the compositions set forth in the claims and therefor the cited references rendered the claims non-allowable. The Applicant's substitution of the term “consisting essentially of” instead of comprising was made and submitted as an amendment to the application and Examiner Chorbaji undertook an additional search.

Examiner Chorbaji in the September 12, 2004, Final Office Action indicated that the applicant's use of the phrase “or chemical equivalent thereof” was not taught in the original disclosure and as such Claims 1-3, 13, 15, 17-20 and 31-32 were rejected under 35 U.S.C. §112. Consequently Claims 1-3, 13, 15, 17-20 and 31-32 have all been currently amended herein by deleting the term "or chemical equivalent thereof." In the Final Office Action the Examiner also held that the scope of the claims (Claims 1-60) of the instant application were rendered obvious by U.S. Patent No. 6,596,401 (Terry, et al.). In response the Applicant makes this request for continued examination pursuant to 37 CFR 1.114 and that the Application be amended in the Claims as aforementioned.

## **DISCUSSION**

This communication is a response to the Final Office Action in the form of a submission made pursuant to a request for continued examination pursuant to 37 CFR 1.114 for Bradley J. Eldred U.S. Patent Application No. 10/679,660.

### **Claim rejections.**

Examiner Chorbaji in the May 9, 2004, First Office Action and also in the June 29, 2004, interview indicated that the scope of the claims of the instant application were anticipated by U.S. Patent No. 6,596,401 (Terry, et al.), or otherwise rendered obvious by Terry, U.S. Patent No. 5,997,814 (Minerovic, et al.) and also U.S. Patent No. 6,541,606 (Margolin, et al.) Examiner Chorbaji indicated that the use of the word "comprising" in the claims did not sufficiently limit the claims to the compositions set forth in the claims and therefor the cited references rendered the claims non-allowable. In response to Examiner Chorbaji's first office action the Applicant amended the claims by facsimile transmission on July 5, 2004, and replaced the term "comprising" with the terms "consisting essentially of" which upon further search removed the anticipation rejection, however, the obviousness rejection has been maintained.

The amended claims submitted on July 5, 2004, also added the language "or chemical equivalent thereof" and in the Final Office Action Examiner Chorbaji held that this language of the claims was not taught in the original disclosure and as such Claims 1-3, 13, 15, 17-20 and 31-32 were rejected under 35 U.S.C. §112. The Applicant in response to this finding has further amended the claims as set forth above to remove the terms "or chemical equivalent thereof" in Claims 1-3, 13, 15, 17-20 and 31-32.

In the First Office Action Examiner Chorbaji states in reference to claims 22-30, 34-42 and 43-60 that the Terry patent teaches a method for "dissolving the mixture into a user selected liquid (col. 6, lines 8 - 10 such that algae can grow in aqueous systems such that it is necessary to dissolve the composition in the liquid in order to inhibit its growth). With respect to the concept of purification, Terry et al., composition for example purifies surfaces that may have algae thereon by inhibiting their growth." This assertion that Terry teaches that the mixture must be dissolved is simply not correct. Examiner Chorbaji cites Col. 6, lines 8 - 10 in which Terry states, "It is an object of the present invention to provide compositions that inhibit the growth of algae, mollusks, bacterial and bioslimes on surfaces. . . ." as the basis for saying that Terry teaches a dissolved composition. However, the word "surface" is the key to what this section teaches and ultimately claims. Terry makes absolutely no reference to the composition being dissolved - this whole section cited by Examiner Chorbaji teaches the ability of the Terry composition to have it applied to and remain on - i.e. not dissolving - to "inhibit the growth...on surfaces." For instance, Bioslimes, by definition, are an attached surface community of microbes of various types and are not in the "planktonic" or "free-swimming" form. The Terry patent, if anything, does teach that applying the claimed composition

to a surface will prevent or inhibit growth but there is no reference anywhere that teaches or claims dissolving into a liquid medium (potable or not). The Terry patent teaches a composition that prevents growth on surfaces in the same manner that copper based paints have been used for years to protect boat surfaces that are underwater from having "algae, mollusks, bacterial and bioslimes" form on the surface of the boat. Again in Col. 18 lines 58-65, et seq. the Terry patent references mollusks, bioslimes, algae, etc., but once again it specifically and only refers to use of the composition as a coating and certainly no claims or teaching relative to potable fluids.

In part Examiner Chorbaji used the Terry patent's references to various alcohols to reject Claims 31-33 of the instant application. In particular Examiner Chorbaji cites Col. 7 lines 33 - 35 in reference to the composition incorporating an alcohol. Examiner Chorbaji is incorrect to assert that the use of alcohol in the Terry patent is part of the composition being taught or claimed as an antimicrobial or purification component. In fact no reference whatsoever is made in the claims to any alcohol as a so-called purification component or "active agent." Simply stated the Terry patent teaches the use of various alcohols solely as part of the manufacturing step to form the silane copolymers (Terry Patent Columns 7 and 8) and does not teach or use the alcohols in any way as an "active agent" for purification. The instant patent application's described and claimed invention depends upon the synergistic purification or antimicrobial effect of all components, including the alcohol.

Furthermore, the Terry patent depends on its panoply of "active agents" to be bound up and held in place by a hydrophobic silane copolymer, and not dissolved in a fluid as does the instant invention. Every variation of the Terry disclosure specifically references the fundamental requirement for the invention to have a silane copolymer or monomer as a basis for the composition. Since all of the Terry embodiments incorporate a nonsoluble base it does not teach or claim the instant invention.

In the Final Office Action the Examiner also held that the scope of the claims (Claims 1-60) of the instant application were rendered obvious by U.S. Patent No. 6,596,401 (Terry, et al.). The Applicant has amended all the claims (Claims 1-66) to include the limitation for "producing potable fluids." The Terry patent neither teaches nor claims a potable water treatment composition. Rather the patent teaches a composition specifically designed to remain on a solid surface in extremely high concentrations, which if they were placed in solution in the amounts that the Terry patent teaches would never produce a potable fluid, in fact it might well be toxic and considered a

hazardous substance or Priority Toxic Pollutant under current EPA regulations. 40 CFR §§116.4 & 131.36. The Terry patent teaches and claims a surface treatment where an array of antimicrobial substances are held in place on a treated surface.

In general, the Terry patent deals with placing a coating on a variety of materials which affect the surface characteristics (lubricity, resistance to water, etc.) of the material coated. Those substances may exhibit antimicrobial along with numerous other properties and do, indeed, speak to the use of metal ions, an alcohol and a plant extract, as well as many other antimicrobial agents. However, Terry's patent clearly focuses on the formulation of the coating as being something that is resistant to being dissolved by water specifically, because it is the object of the Terry patent to have the coating to remain even in the presence of water or other liquids that come in contact with it. It claims improvements over current coatings which the Terry patent states are poorly adherent to silicone rubber and wash off when the device is wetted. The Terry patent neither teaches or claims whatsoever about it being a formula or components of a formula that can be dissolved in water. Nor does the Terry patent teach or claim the use of alcohols as "active agents" for purification or disinfection. As such neither does the Terry patent teach or claim a composition for the treatment of fluid to render them potable. Clearly the Terry patent teaches the treatment of surfaces in such huge concentrations, in essence taking a "shotgun to kill the fly," as opposed to the instant application where a specific group of compounds are combined and dissolved in a fluid to render that fluid potable or as in the newly added Claims 67-69, in concentrations below the EPA maximum freshwater concentrations for regulated Priority Toxic Pollutants. By way of example the EPA Priority Toxic Pollutant maximum concentration in freshwater for copper is 17 mg/l (17 ppm), for silver it is 3.4 mg/l (3.4 ppm) and for zinc it is 110 mg/l (110 ppm). 40 CFR §131.36(b)(1).

In Col. 3, line 40, et seq. Terry refers to providing antimicrobial activity to the surface of an article but nowhere does the Terry patent mention that this invention can be used to provide an antimicrobial solution that would work as a stand alone mixture for treatment of potable fluids, etc.

In Col 4, line 62 Terry describes an oft-repeated feature of the invention in that the coating (presumably with its antimicrobial properties) do not leach excessively over time. This again goes to the fact that the Terry coating has been formulated so that it is not water soluble. This is repeated throughout the patent including Col. 5, lines 46 and 47 and implied in many other areas, such as Col. 6, line 10, et seq. The Terry patent at Col. 8, lines 53 – 55 is one of many areas in which Terry limits the water content of the active agent/coating.

Furthermore, Col. 10, lines 10 – 12 of the Terry patent goes further by saying that it is preferred that the solvent be dry to prevent water contamination. Col. 12, lines 64-67 again references the problems associated with water contamination of the formulation. Col. 13, lines 6 – 8 states it is desirable to limit the amount of water present during manufacture of the coating. Given that water solubility and contamination are such critical factors it is simply not possible to conclude that the Terry patent renders obvious the treatment of fluids.

To demonstrate the magnitude of the concentrations taught in Terry the formulation of Terry's active agents should be examined, which active agents incorporate the antimicrobial features the Terry patent generally references, which are listed as being from about 0.1% to about 50% of the dry weight of the composition with the preferred amounts being 1% to 30%. This is found in Col. 13, lines 44 – 49. Immediately following this statement are Terry's claims for components of an active agent that would exhibit antimicrobial properties. Nothing in the Terry patent teaches or claims a synergistic effect. The Terry patent simply lists a number of substances in huge concentrations that can exhibit antimicrobial properties. The active agents or compounds thereof in Terry including the ranges of concentration are not taught or claimed by the Terry patent to have a synergistic effect. The concentration ranges taught by Terry are 1,000 to 500,000 ppm. The concentrations of metal ions in the instant application once limited to potable fluids must typically be 1 ppm (or less) in order for the final fluid to be considered potable, and in concentrations below the EPA maximum freshwater concentrations for Priority Toxic Pollutants as claimed in Claims 67-69. The instant application relies on the synergistic effect of the components of which Terry makes no such claim nor does it teach it. The Terry levels of the active agents are tens or hundreds of thousands of times (or more) higher than the World Health Organization (WHO) or the U.S. Environmental Protection Agency (EPA) accepted or recommended levels for potable fluids, as well as the EPA's action levels for hazardous substances or Priority Toxic Pollutants.

Terry in Col. 21, lines 15 to 30 describes the use of silver, but the concentration is 100,000 ppm based on dry weight and the device being "coated" is dipped into this and then top coated. More specifically, he speaks of the end product being a silver chloride colloid. The instant invention uses no colloidal properties and relies on complete dissolution of the silver and other active components.

New independent Claims 67 - 69 are added to more specifically claim the concentrations of the active ingredients that were originally covered by the independent Claims 1 - 3. Since

Claims 1- 3 have now been limited to a concentration that would render potable fluids, Claims 67 - 69 were added to claim concentrations up to the EPA maximum freshwater concentration pursuant to the Priority Toxic Pollutant criteria for the higher concentrations of the instant invention in other purification applications. It should be noted that the amended claims also particularly point out and claim that this invention is dissolvable in fluids unlike the prior art references cited to date. These additional limitations thereby render this application allowable.

Over two years of extensive experimentation was undertaken to invent the water purification system manifest in the instant application and the findings of the experiments were unexpected. It was discovered that a very specific group of materials when combined produced potable water in a very short period of time with a residual purification effect that was completely unexpected. When some of the individual components claimed in this patent application were tested separately for their purification capacity, these individual components were typically four to seven logs (10,000 to 10,000,000 times) less effective than when the same components were combined as taught and claimed in the instant patent application. Furthermore, when the remaining components claimed in this patent application were tested separately for their purification capacity, these components were completely ineffective having no "kill" or inactivation efficacy on the microorganisms tested. These test results of the purification capacity of the individual components is in stark contrast to the 6 to 7+ log "kill" rate consistently obtained from the combinations of components claimed in this invention. The present invention exhibits a synergistic purification capacity that is as much as 10,000,000 times greater than that of some of the individual components. This invention's purification capacity appears to yield at least 100,000 times the inactivation efficacy than a mere sum of the individual component's purification capacities. This result was genuinely unexpected and ultimately the conclusion of hundreds of experiments and countless hours of analysis and calculation.

With the foregoing amendments and discussion, as amended, all claims in this patent application are now allowable. The Applicant has amended the Application in response to the Examiner's written and oral objections and statements made respecting novelty.

There is a fee of \$395.00 due with respect to this Request for Continued Examination pursuant to 37 CFR §§ 1.17(e) & 1.114, and a fee of \$300.00 due with respect to the three additional independent claims in excess of three pursuant to 37 CFR §1.16(b). Two checks are enclosed herewith in payment of said fees.

On the basis of the above submission, payment of the fees prescribed in 37 CFR §§1.16(b) & 1.17(e) and this request for continued examination pursuant to 37 CFR §1.114, amendment of the application is believed to be warranted and allowance of the application as amended is believed to also be warranted.

Respectfully submitted,



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